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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,053	12/09/2003	Robert W. Otey	ferus10243	6747

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EXAMINER	
TRINH, THANH TRUC	
ART UNIT	PAPER NUMBER
1753	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/731,053	OTEY, ROBERT W.	
	Examiner	Art Unit	
	Thanh-Truc Trinh	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *16-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/09/2003 , 06/27/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-15, drawn to a product, classified in class 136, subclass 203

II. Claim 16-19, drawn to a method, classified in class 136, subclass 201.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by different methods of attaching layers such as soldering.

Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

During a telephone conversation with the Applicant's representative, Mr. Robert Deleault, on 1/23/07 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant

in replying to this Office action. Invention of Group II is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Application is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Hazen (US Patent 5040381).

See Figures 2-3.

Regarding claim 1, Hazen discloses a thermoelectric module comprising an object (or heat sink 78) to be heated having a surface, at least one electrically conductive lower pad (or copper layer 68) bonded directly to the surface of the object with a thermally conductive dielectric material 70, at least one thermoelectric element 64 coupled on one end to the lower electrically conductive pad, and at least one electrically

conductive upper pad (copper circuit 60) coupled to an opposite end of the thermoelectric element, (See Figure 2), and copper layers 60 and 68 are served as the electrical power connections coupled to the module. (See col. 4 lines 39-41 and col. 5 lines 5-9)

Regarding claim 2, Hazen discloses a substrate (plate 54) disposed on the electrically conductive upper pad. (See Figure 2)

Regarding claim 3, Hazen discloses a second object (plate 54) to be cooled having a surface bonded directly to the electrically conductive upper pad. (See Figure 2 or col. 4 lines 1-31)

Regarding claims 4-6, Hazen describes the thermally conductive dielectric material is any thermally conductive dielectric adhesive polymer; typically polyimide, polyamide or epoxy films loaded with particulate solid; capable of bonding the conductive pad to the surface. (See col. 4 lines 1-24 and 45-61).

Regarding claim 7, Hazen discloses the module is a single polarity thermoelectric module, either P or N column. (See Figure 2)

Regarding claim 8, Hazen discloses the thermoelectric element is selected from the group consisting of a P-type thermoelectric element and an N-type thermoelectric element. (See Figure 2 or col. 4 lines 41-44)

Regarding claim 9, Hazen discloses a thermoelectric module comprising an object (heat sink 78) to be heated, having a surface; an array of electrically conductive lower pads 68 bonded directly to the surface of the object with a thermally conductive dielectric material 70, wherein the object provides the reinforcing structural integrity of a substrate; at least one thermoelectric element 64 coupled on one end to each of the array of electrically conductive lower pads forming an array of thermoelectric elements; a plurality of electrically conductive upper pads 60 coupled to an opposite end of the array of thermoelectric elements; (See Figure 2) and copper layers 60 and 68 are served as the electrical power connections coupled to the module. (See col. 4 lines 39-41 and col. 5 lines 5-9).

Regarding claim 10, Hazen further discloses a substrate (plate 54) disposed on the plurality of electrically conductive upper pads on the opposite end of the array of thermoelectric elements. (See Figure 2)

Regarding claim 11, Hazen also discloses a second object (plate 54) having a surface bonded directly to the plurality of electrically conductive upper pads 60 on the opposite end of the array of thermoelectric elements 64. (See Figure 2).

Regarding claim 12-14, Hazen describes the thermally conductive dielectric material is a thermally conductive dielectric adhesive polymer capable of bonding the array of electrically conductive lower pads to the surface. (See col. 4 lines 1-24 and 45-61)

Regarding claim 15, Hazen discloses a direct bonded thermoelectric module comprising an object (heat sink 78) to be heated, having a surface; electrically conductive means (copper layer 68) bonded directly to the surface of the object with a thermally conductive dielectric bonding means (layer 70) wherein the object provides the reinforcing structural integrity of a substrate in place of substrate; at least one thermoelectric element 64 coupled on one end to the electrically conductive means; and electrical connection means (copper layer 60) coupled to an opposite end of the thermoelectric element, and electrical power means (copper layers 60 and 68) coupled to the module. (See Figure 2).

4. Claims 1, 3-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshioka et al. (US Patent 6274803).

See Figures 5 and 9A-C.

Regarding claim 1, Yoshioka et al. disclose a thermoelectric module comprising an object (or copper foil 52) to be heated or cooled having a surface, at least one electrically conductive lower pad (or lower electrode 6) bonded directly to the surface of

the object with a thermally conductive dielectric material 51, at least one thermoelectric element (21 or 22) coupled on one end to the lower electrically conductive pad, and at least one electrically conductive upper pad (or upper electrode 5) coupled to an opposite end of the thermoelectric element, (See Figure 5), and electrical power connections 130 coupled to the module. (See Figure 9A-C or col. 9 lines 13-18)

Regarding claim 3, Yoshioka et al. discloses a second object (copper foil 52 on the upper side of the module) to be heated or cooled having a surface bonded directly to the electrically conductive upper pad. (See Figure 5)

Regarding claims 4-6, Yoshioka et al. describes the thermally conductive dielectric material is any thermally conductive dielectric adhesive polymer such as polyimide resin or epoxy resin loaded with particulate solid, capable of bonding the conductive pad to the surface. (See col. 7 lines 50-68 and col. 8 lines 1-2).

Regarding claim 7, Yoshioka et al. discloses the module is a single polarity thermoelectric module, either P or N column. (See Figure 5)

Regarding claim 8, Yoshioka et al. discloses the thermoelectric element is selected from the group consisting of a P-type thermoelectric element and an N-type thermoelectric element. (See Figure 5)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh-Truc Trinh whose telephone number is 571-272-6594. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TT
3/2/2007

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